Title: IMAGE FORMING APPARATUS AND METHOD FOR INPUTTING ENCRYPTION KEY SETTING
Inventor(s): Hironobu MACHIDA et al.
DOCKET NO.: 036741-0130

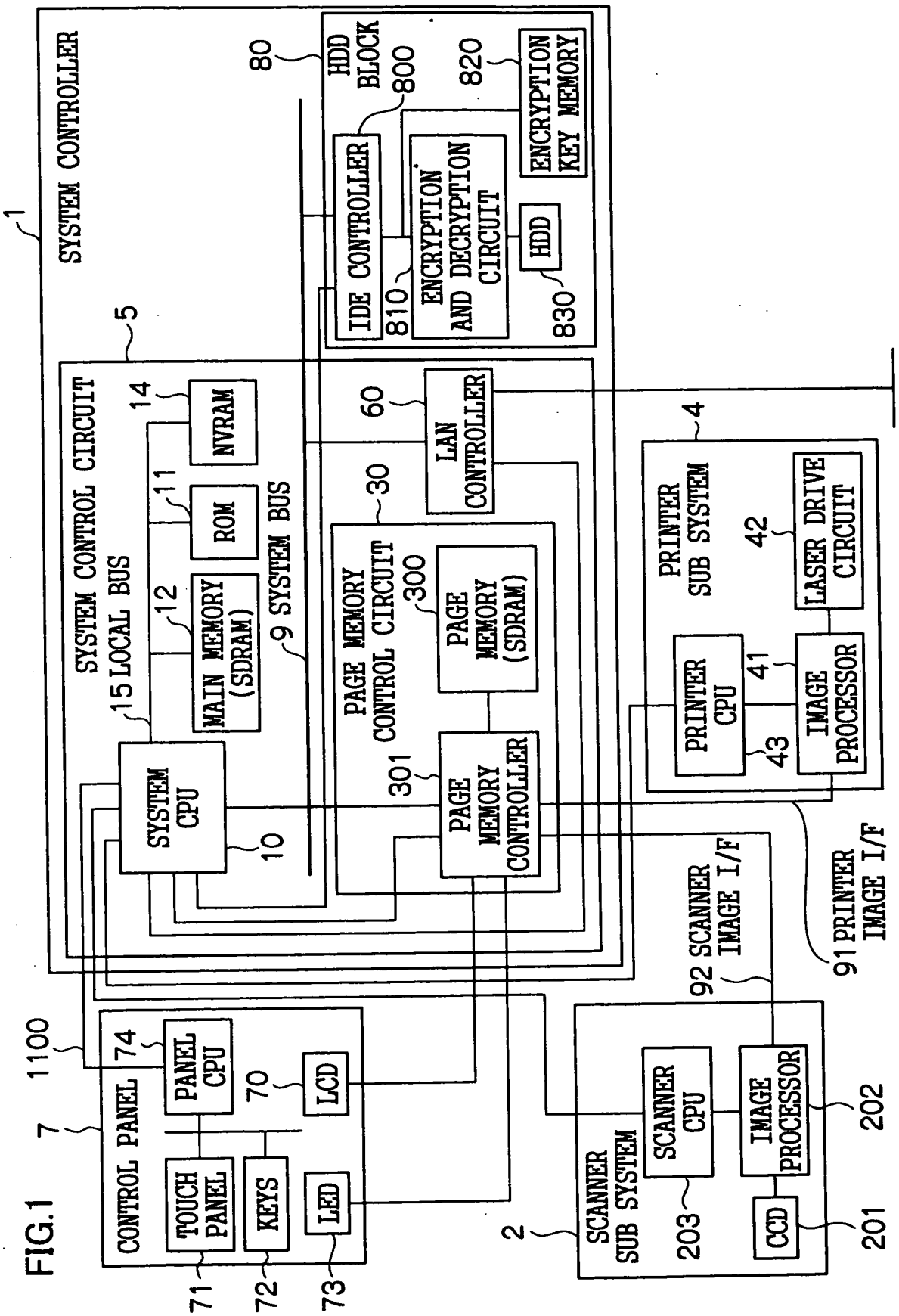

FIG.1

FIG.2

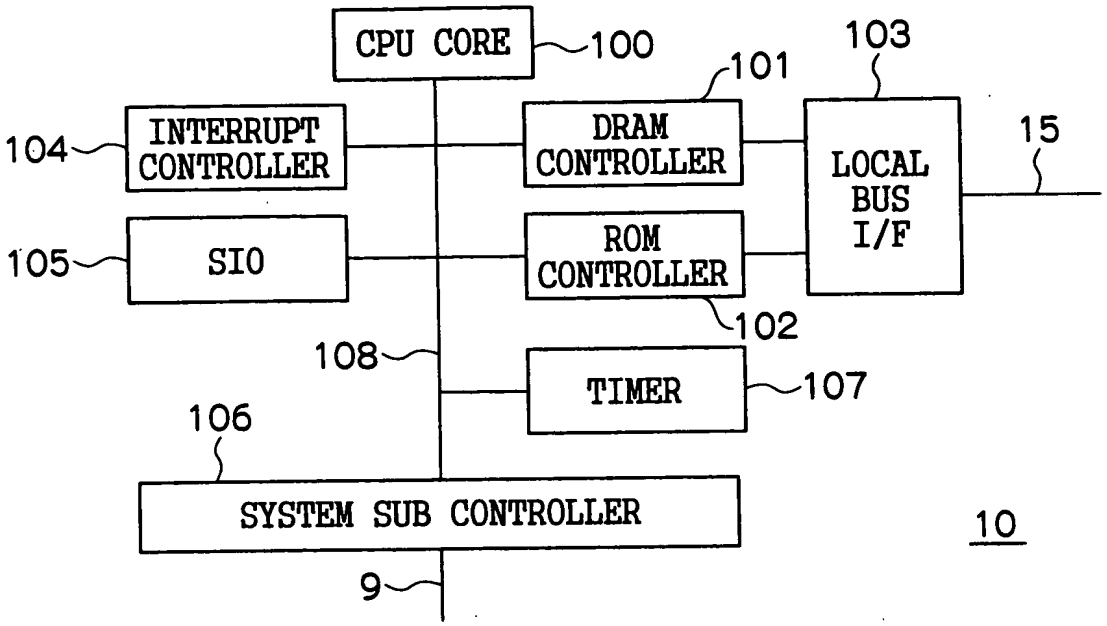
CPU CORE
100
101
103
104
INTERRUPT CONTROLLER
DRAM CONTROLLER
LOCAL BUS I/F
15
105
SIO
ROM CONTROLLER
102
108
TIMER
107
106
SYSTEM SUB CONTROLLER
10
9

FIG.3

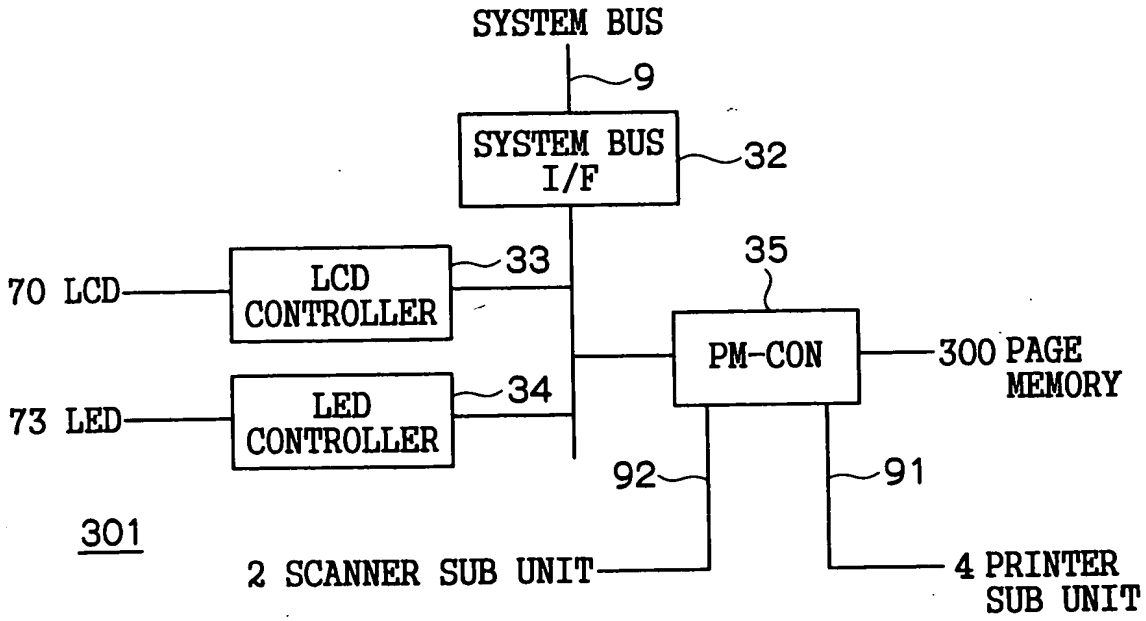
SYSTEM BUS
9
SYSTEM BUS I/F
32
35
70 LCD
LCD CONTROLLER
33
PM-CON
300 PAGE MEMORY
73 LED
LED CONTROLLER
34
92
91
301
2 SCANNER SUB UNIT
4 PRINTER SUB UNIT

FIG.4

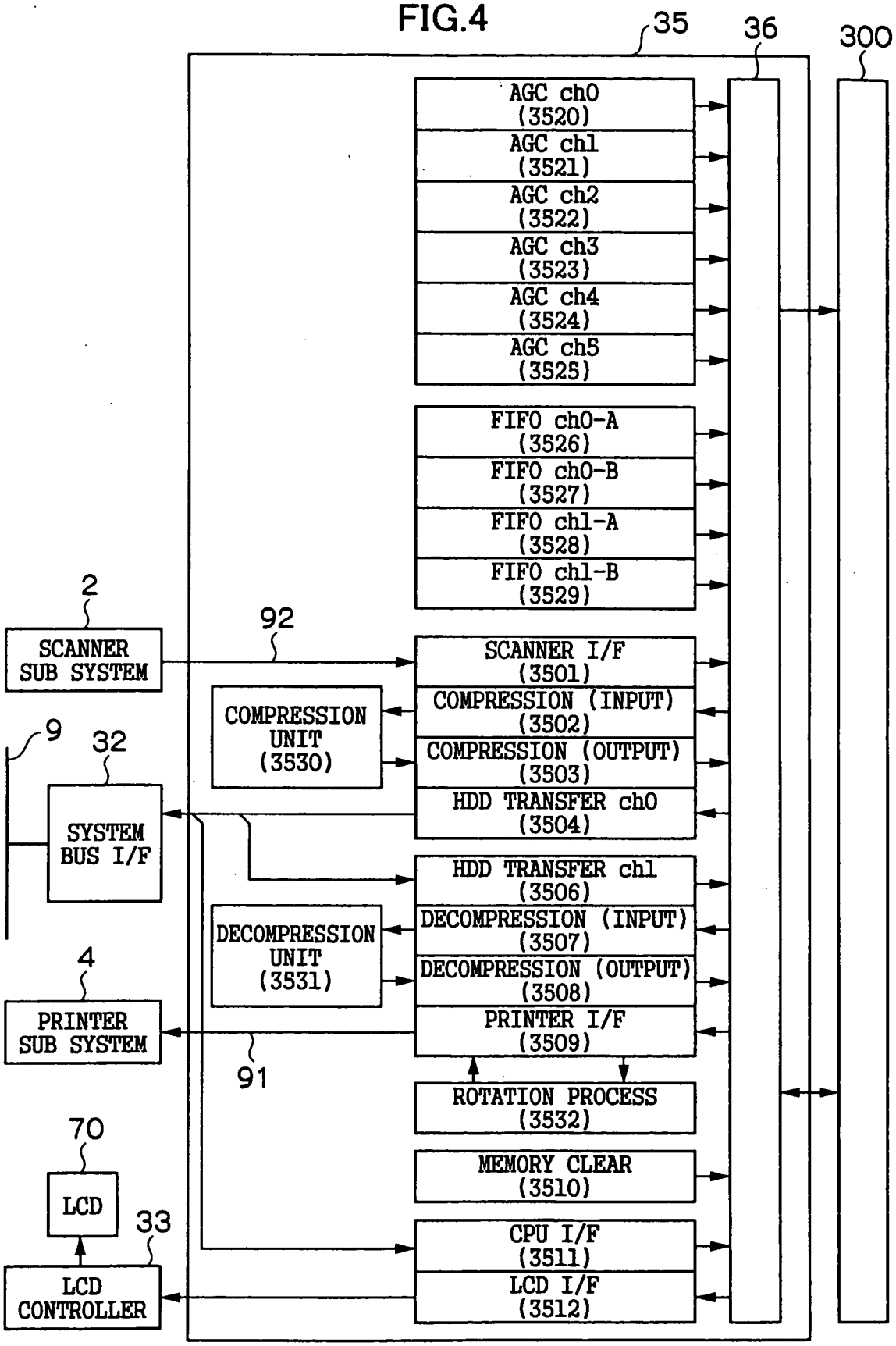
35
36
300
AGC ch0 (3520)
AGC ch1 (3521)
AGC ch2 (3522)
AGC ch3 (3523)
AGC ch4 (3524)
AGC ch5 (3525)
FIFO ch0-A (3526)
FIFO ch0-B (3527)
FIFO ch1-A (3528)
FIFO ch1-B (3529)
2
SCANNER SUB SYSTEM
92
SCANNER I/F (3501)
COMPRESSION UNIT (3530)
COMPRESSION (INPUT) (3502)
COMPRESSION (OUTPUT) (3503)
9
32
SYSTEM BUS I/F
HDD TRANSFER ch0 (3504)
HDD TRANSFER ch1 (3506)
DECOMPRESSION UNIT (3531)
DECOMPRESSION (INPUT) (3507)
DECOMPRESSION (OUTPUT) (3508)
4
PRINTER SUB SYSTEM
PRINTER I/F (3509)
91
ROTATION PROCESS (3532)
70
LCD
MEMORY CLEAR (3510)
33
CPU I/F (3511)
LCD CONTROLLER
LCD I/F (3512)

FIG.5

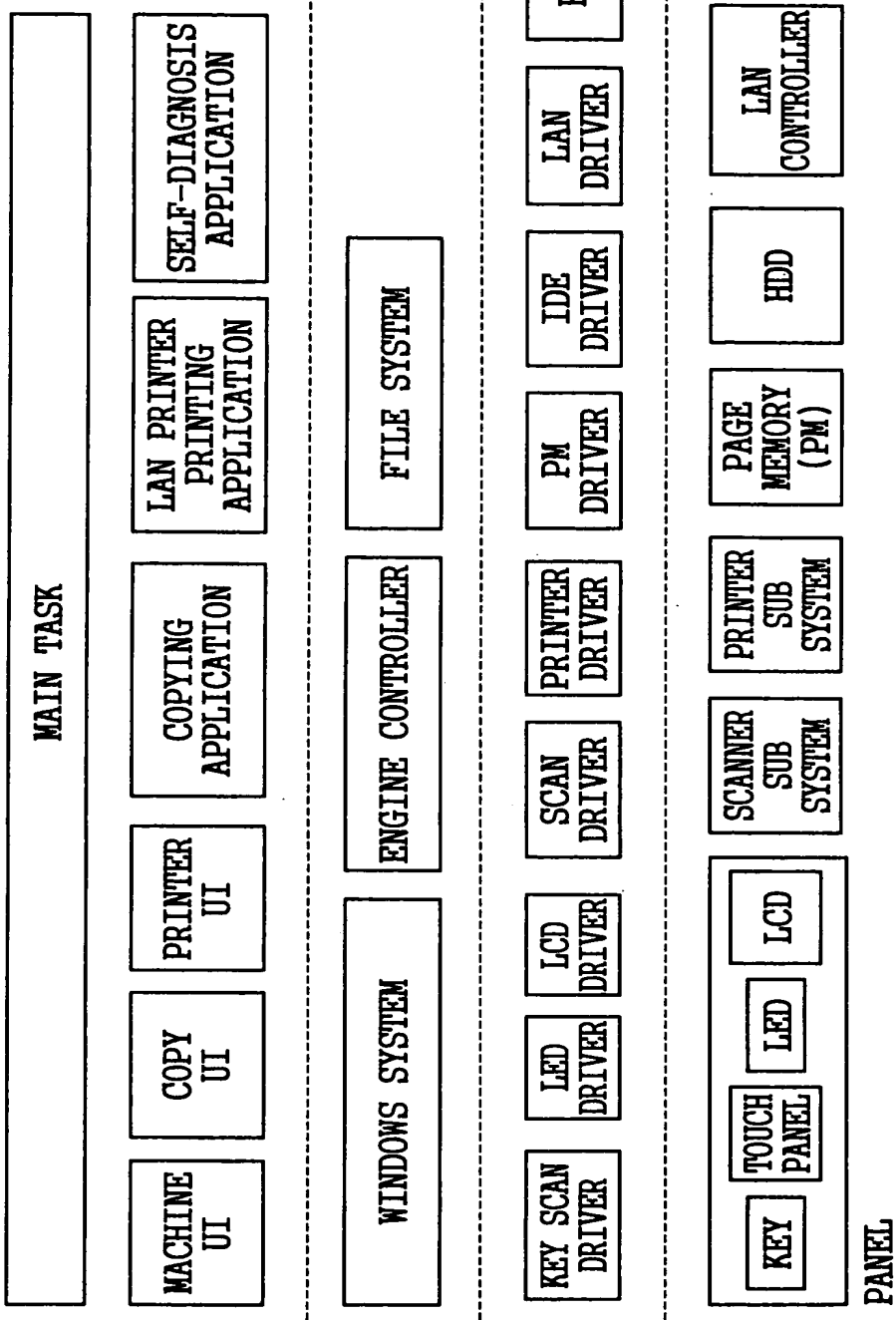
APPLICATION LAYER
MAIN TASK
MACHINE UI
COPY UI
PRINTER UI
COPYING APPLICATION
LAN PRINTER PRINTING APPLICATION
SELF-DIAGNOSIS APPLICATION
LIBRARY LAYER
WINDOWS SYSTEM
ENGINE CONTROLLER
FILE SYSTEM
DRIVER LAYER
KEY SCAN DRIVER
LED DRIVER
LCD DRIVER
SCAN DRIVER
PRINTER DRIVER
PM DRIVER
IDE DRIVER
LAN DRIVER
BOOT
H/W
PANEL
KEY
TOUCH PANEL
LED
LCD
SCANNER SUB SYSTEM
PRINTER SUB SYSTEM
PAGE MEMORY (PM)
HDD
LAN CONTROLLER

FIG.6

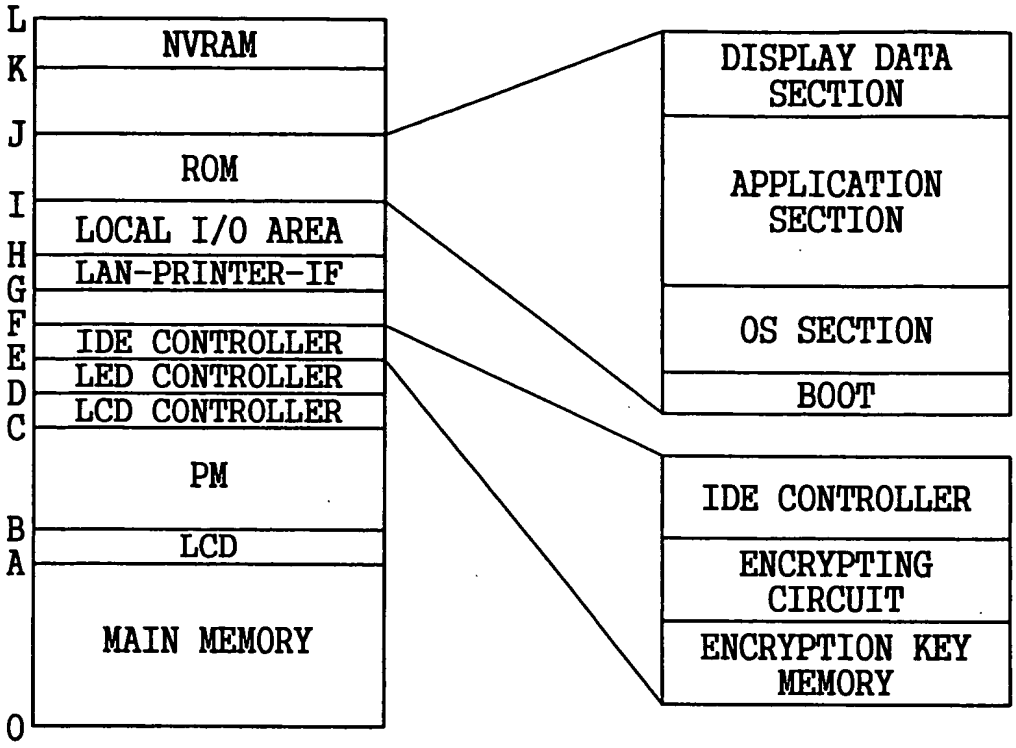
L
K
J
I
H
G
F
E
D
C
B
A
0
NVRAM
ROM
LOCAL I/O AREA
LAN-PRINTER-IF
IDE CONTROLLER
LED CONTROLLER
LCD CONTROLLER
PM
LCD
MAIN MEMORY
DISPLAY DATA SECTION
APPLICATION SECTION
OS SECTION
BOOT
IDE CONTROLLER
ENCRYPTING CIRCUIT
ENCRYPTION KEY MEMORY

FIG.7

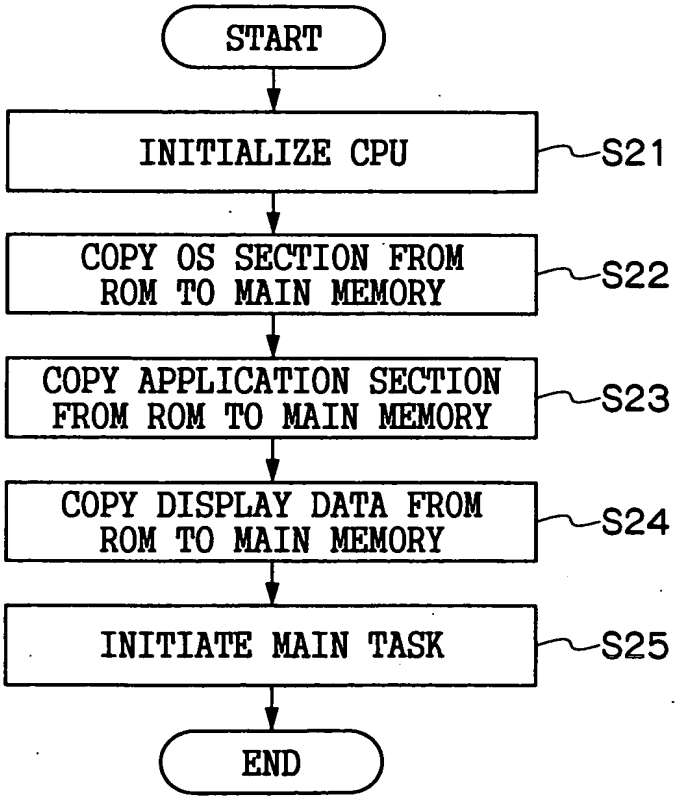
START
INITIALIZE CPU
S21
COPY OS SECTION FROM ROM TO MAIN MEMORY
S22
COPY APPLICATION SECTION FROM ROM TO MAIN MEMORY
S23
COPY DISPLAY DATA FROM ROM TO MAIN MEMORY
S24
INITIATE MAIN TASK
S25
END

FIG.8

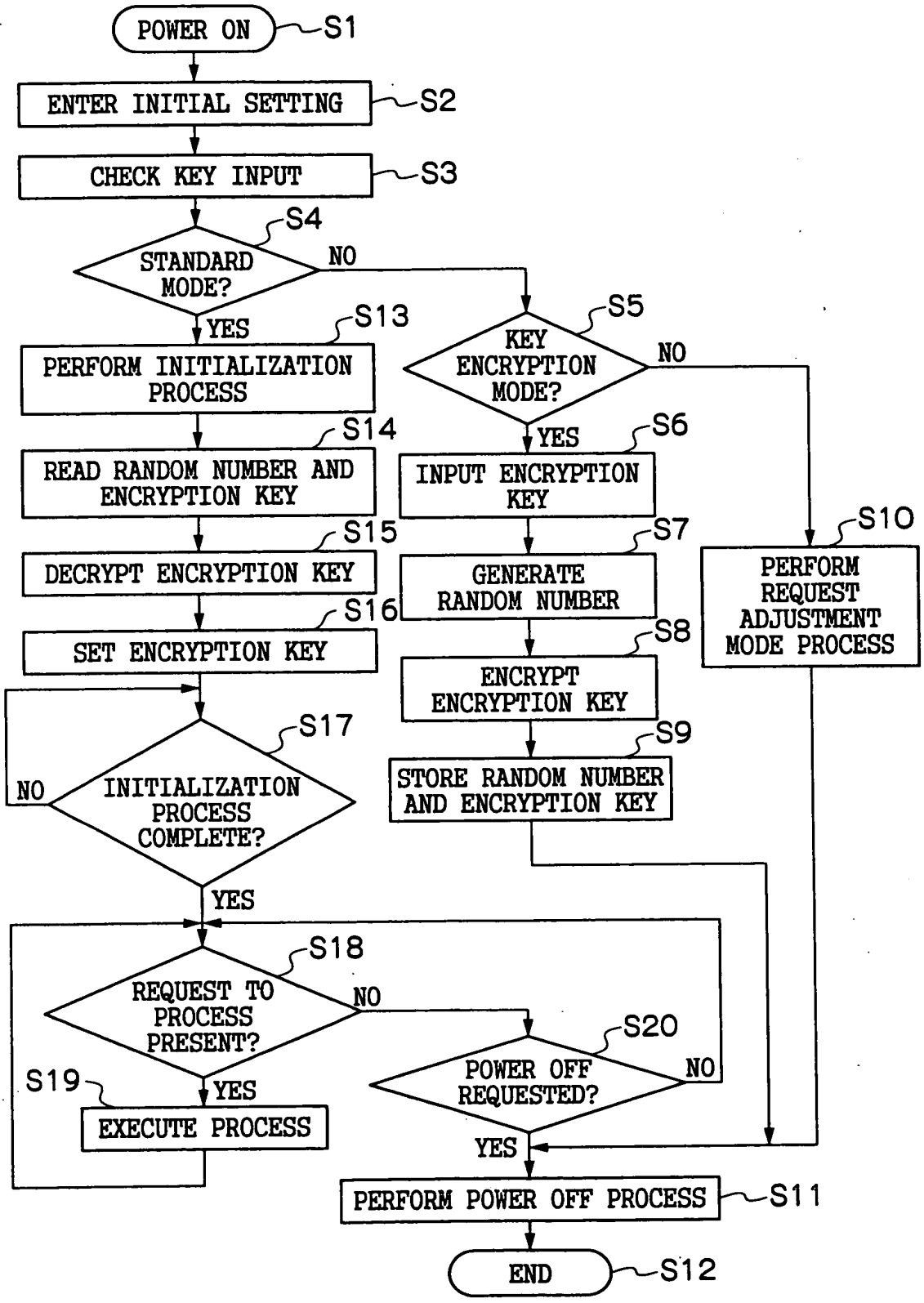
POWER ON
S1
ENTER INITIAL SETTING
S2
CHECK KEY INPUT
S3
S4
STANDARD MODE?
NO
YES
S13
PERFORM INITIALIZATION PROCESS
S14
READ RANDOM NUMBER AND ENCRYPTION KEY
S15
DECRYPT ENCRYPTION KEY
S16
SET ENCRYPTION KEY
S17
NO
INITIALIZATION PROCESS COMPLETE?
YES
S5
KEY ENCRYPTION MODE?
NO
YES
S6
INPUT ENCRYPTION KEY
S7
GENERATE RANDOM NUMBER
S8
ENCRYPT ENCRYPTION KEY
S9
STORE RANDOM NUMBER AND ENCRYPTION KEY
S10
PERFORM REQUEST ADJUSTMENT MODE PROCESS
S18
REQUEST TO PROCESS PRESENT?
NO
YES
S19
EXECUTE PROCESS
S20
POWER OFF REQUESTED?
NO
YES
PERFORM POWER OFF PROCESS
S11
END
S12

FIG.9

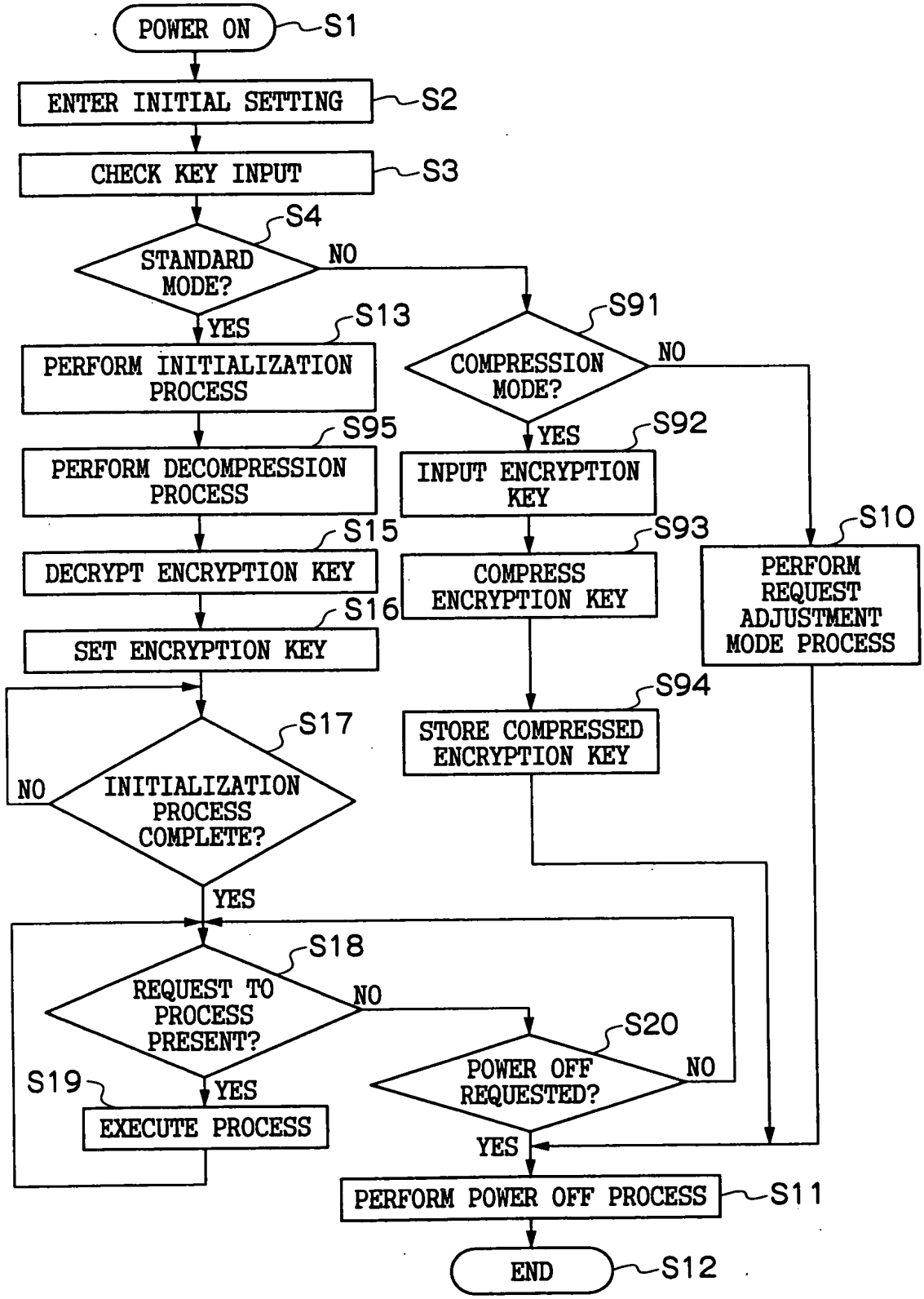
POWER ON
S1
ENTER INITIAL SETTING
S2
CHECK KEY INPUT
S3
S4
STANDARD MODE?
NO
YES
S13
PERFORM INITIALIZATION PROCESS
S95
PERFORM DECOMPRESSION PROCESS
S15
DECRYPT ENCRYPTION KEY
S16
SET ENCRYPTION KEY
S17
NO
INITIALIZATION PROCESS COMPLETE?
YES
S18
REQUEST TO PROCESS PRESENT?
NO
YES
S19
EXECUTE PROCESS
S91
COMPRESSION MODE?
NO
YES
S92
INPUT ENCRYPTION KEY
S93
COMPRESS ENCRYPTION KEY
S94
STORE COMPRESSED ENCRYPTION KEY
S10
PERFORM REQUEST ADJUSTMENT MODE PROCESS
S20
POWER OFF REQUESTED?
NO
YES
PERFORM POWER OFF PROCESS
S11
END
S12

FIG.10

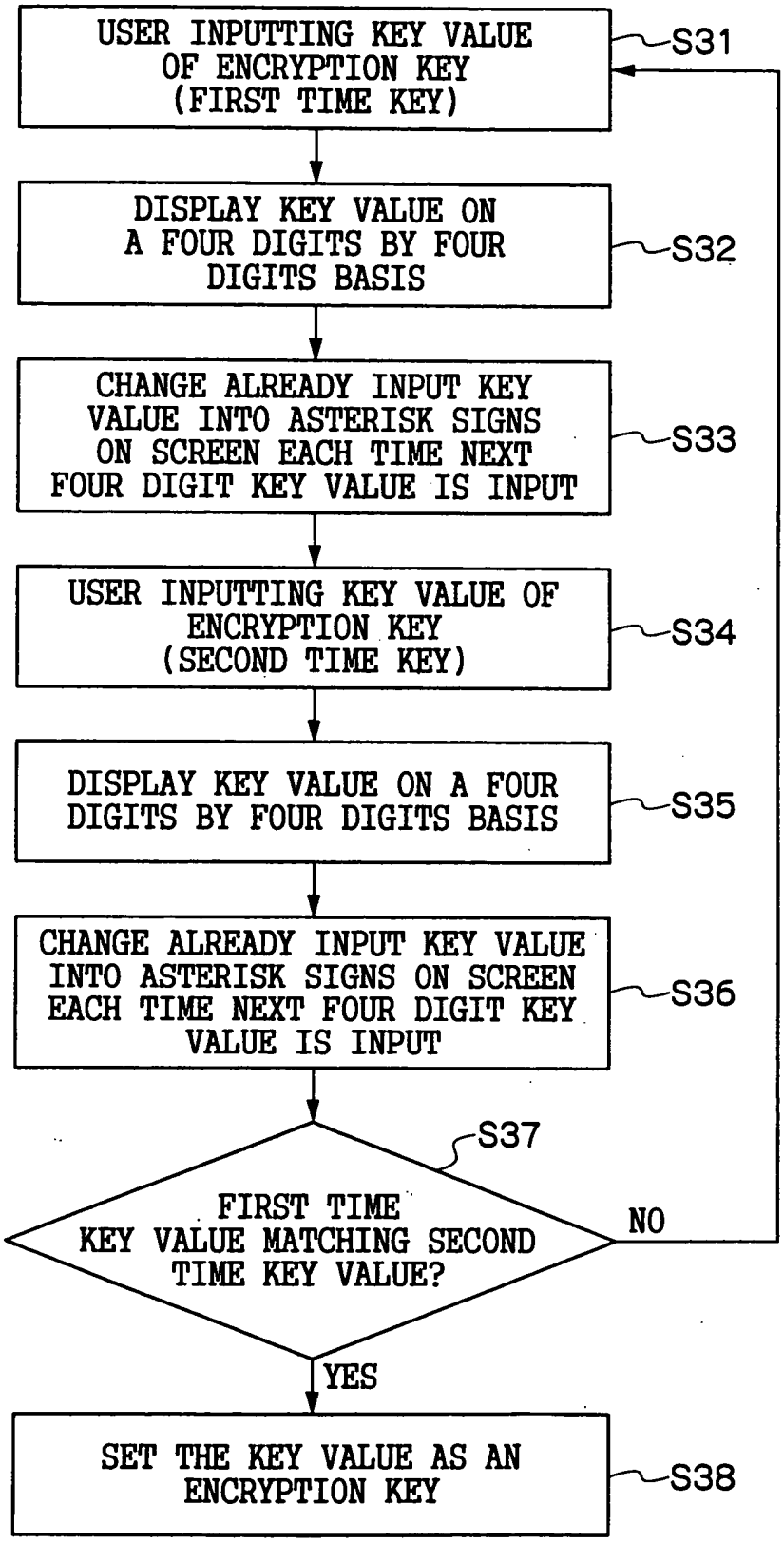
USER INPUTTING KEY VALUE OF ENCRYPTION KEY (FIRST TIME KEY)
S31
DISPLAY KEY VALUE ON A FOUR DIGITS BY FOUR DIGITS BASIS
S32
CHANGE ALREADY INPUT KEY VALUE INTO ASTERISK SIGNS ON SCREEN EACH TIME NEXT FOUR DIGIT KEY VALUE IS INPUT
S33
USER INPUTTING KEY VALUE OF ENCRYPTION KEY (SECOND TIME KEY)
S34
DISPLAY KEY VALUE ON A FOUR DIGITS BY FOUR DIGITS BASIS
S35
CHANGE ALREADY INPUT KEY VALUE INTO ASTERISK SIGNS ON SCREEN EACH TIME NEXT FOUR DIGIT KEY VALUE IS INPUT
S36
S37
FIRST TIME KEY VALUE MATCHING SECOND TIME KEY VALUE?
NO
YES
SET THE KEY VALUE AS AN ENCRYPTION KEY
S38

FIG.11A

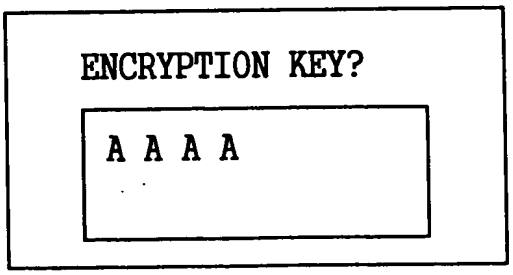

FIG.11B

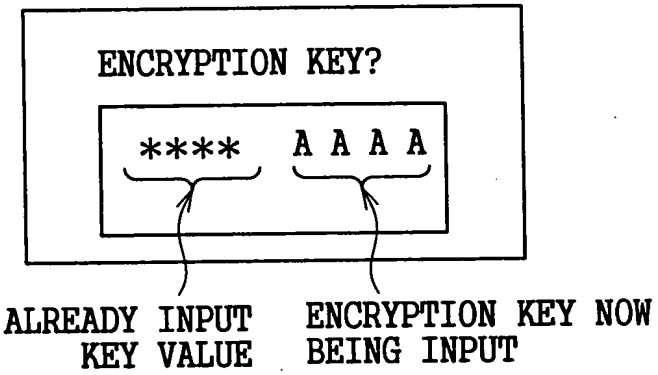

FIG.11C

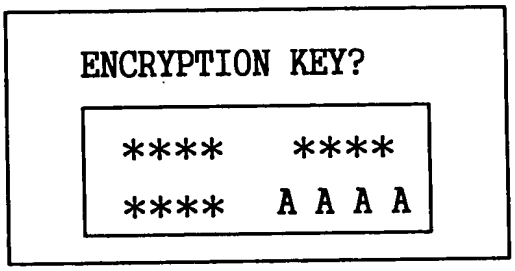
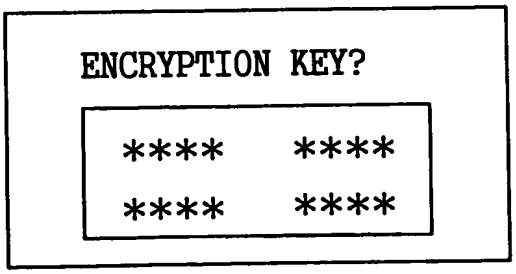
FIG.11D